

1 Part A.) In a survey to obtain the opinion of parents with children under the age of 18 on the effectiveness of the Motion Picture Association of America's rating system, 1748 of 2300 parents responded that the rating system was a useful tool to serve as a guideline for which movies they should allow their children to watch. Construct a confidence interval for the population proportion. (Source: Motion Picture Association of America)

1. Part B) Find the minimum sample size that is required to estimate the proportion within 5% of the true proportion with 98% confidence.

2. Part A) If 17 out of 500 students are math majors what is the value point estimate for the proportion of the students who are mathematics majors?

2. Part B) Construct a 99% confidence interval for the proportion of all local college students who are math majors if $x=17$ and $n=500$.

2. Part C) If you want to estimate the proportion of all local college students who are mathematics majors within 0.005 with 99% confidence, how many students should you survey?

3.) Increasing the confidence level, while keeping other values constant, has what effect on the width of the confidence interval?

- a) The error of estimate increases; therefore, the width of the interval increases.
- b) There is not enough information to determine the effect.
- c) The error of estimate remains unchanged; therefore, the width of the interval remains unchanged.
- d) The error of estimate decreases; therefore, the width of the interval decreases.

4.) According to a study of the 10 largest US domestic airlines, Southwest Airlines has the lowest proportion of late arrivals, at 0.1577. Suppose you were asked to perform a follow-up study for Southwest Airlines in order to update the estimated proportion of late arrivals. What sample size would you use in order to estimate the population proportion to within an error of ± 0.04 with 95% confidence?

5.) A public health survey is to be designed to estimate the proportion of a population having defective vision. How many persons should be examined if the public health commissioner wishes to be 98% certain that the error is below .05 when:

a.) There is no knowledge about the value of p ?

b.) p is known to be about .3?